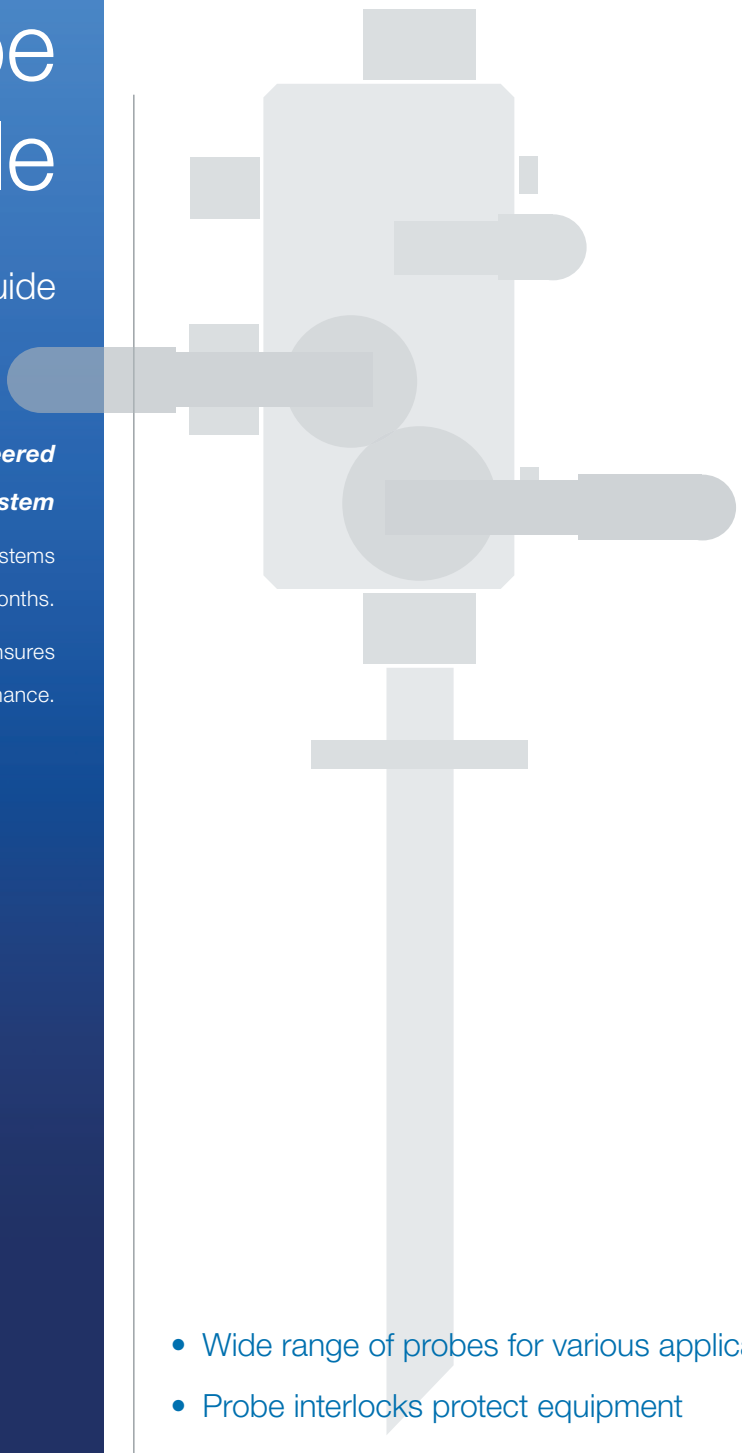
Sample Probe Module

Application Guide

A Swagelok® Pre-Engineered Subsystem

- Pre-engineered subsystems available in weeks, not months.
- Field-tested design ensures optimum system performance.



- Wide range of probes for various applications
- Probe interlocks protect equipment
- Valve interlocks improve safety of operation

Swagelok®

Swagelok Pre-Engineered Subsystems

Swagelok now offers a series of predesigned and preassembled subsystems for use in all types of plants and facilities where fluids are being processed. Use Swagelok pre-engineered subsystems to create fully documented fluid sampling and control systems and bring consistency to your operations. Easy to install and operate, these subsystems offer the high quality and support you expect from Swagelok.

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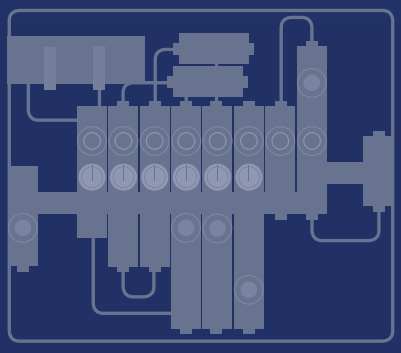
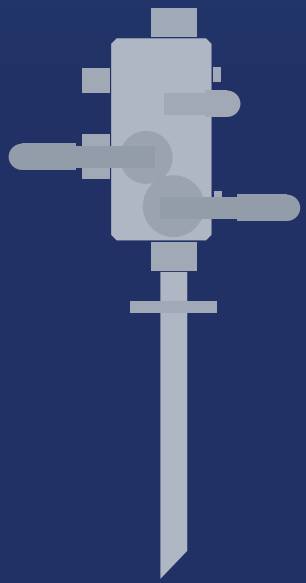
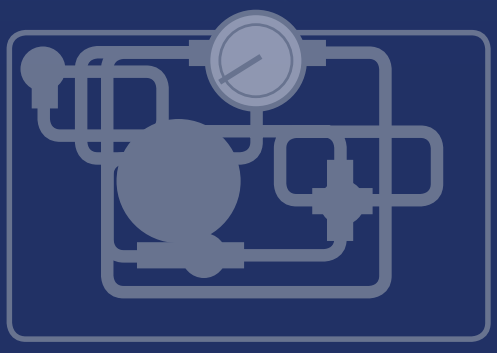






The Swagelok Sample Probe Module (SPM)

Why Use a Swagelok Sample Probe Module?

The oil, gas, and chemical industries use process analyzers to measure the concentration of key components in their gas and liquid streams. These analytical measurements must be reliable to maintain precise process control, which helps reduce costs and improves quality and safety. To ensure a useful analytical measurement, it is critical for extracted samples to be representative of what is in the process pipe and to reach the analyzer in a timely manner. Using sample probes in conjunction with sample probe valves can improve safety, sample purity, and timeliness.

System Safety

Removing a process sample for an online analyzer can be difficult to accomplish safely because the process often operates at high pressures and temperatures. Using a block-and-bleed valve at the sample tap allows proper isolation of the process fluid and venting of the analytical system pressure through the bleed valve.

Sample Purity

To ensure proper analytical control, it is critical to extract a sample that is truly representative of the process media. Further, the sample must be free of any particles that will damage the analyzer. Extracting a sample by connecting a nozzle to a process line allows old process material and heavy particulate to enter the sample line and flow to the analyzer. On the other hand, installing a probe into the center of the process line helps ensure a representative sample is extracted; the probe also helps filter the process particulate.

Timeliness

To control a process effectively, an online analyzer must receive a sample quickly to enable timely process adjustments. Occasionally, a lengthy sample extraction process can render the sample useless before it even reaches the analyzer. One way to minimize time delay to the analyzer is to reduce the analytical system volume. Using a probe to extract a sample can greatly reduce system volume, as compared to collecting a sample with a nozzle.

Swagelok Sample Probe Module (SPM) Basics

The Swagelok SPM is a pre-engineered solution for use in online process analyzers that consists of a welded sample probe (SPW) or retractable sample probe (SPR) a and block-and-bleed sample probe valve (SPV).

- SPW welded sample probes are best suited for use with double block-and-bleed SPVs (SPV-61 and SPV-62). SPV-61 contains a primary block valve, a secondary block valve, and a bleed valve. SPV-62 contains the same valve configuration, but adds a mechanical interlock between the primary block valve and the bleed valve.
- SPR retractable sample probes are best suited for use with single block-and-bleed SPVs (SPV-63 and SPV-64), which include safety features that do not allow the valve to actuate while the probe is in service. SPV-63 contains a primary block valve, a bleed valve, and a probe spool lock. SPV-64 adds a mechanical interlock between the primary block valve and the bleed valve.

Sample Probe Design

A probe provides a faster analyzer response by reducing the volume of the sample system. The nozzle volume can be significant, increasing the required purge volume of the entire sample system. Also, the probe allows the sample to be extracted from the center of the process pipe, which eliminates the extraction of sludge along the pipe walls.

Further, the available 45° angle cut of the Swagelok probe greatly reduces the amount of particulate extracted into the sample system. Both features help ensure the probe extracts a representative sample from the process.

For these reasons, we recommend using a probe in pipes larger than 2 in. (50 mm); this is especially critical for pipes larger than 4 in. (100 mm).

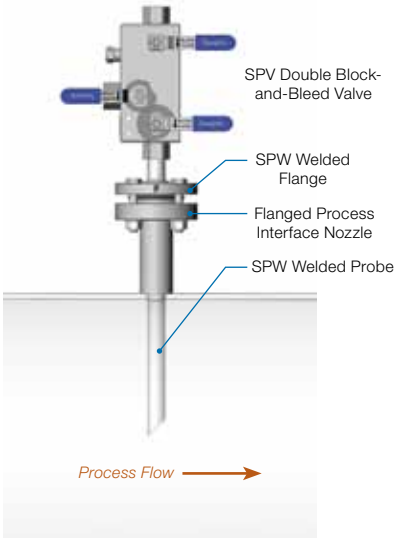
Probe designs can vary in length, diameter, wall thickness, and materials of construction. These parameters will affect the probe's strength, filtering ability, and internal flow velocity. Thicker, larger welded probes will withstand more impact from high process flows, but offer slower flow speeds through the larger internal diameter. However, this slower flow speed allows more particles to fall out of the probe instead of continuing into the analytical sample system. Smaller retractable probes are not as strong as welded probes, but their smaller internal volume provides faster flow speeds to the analyzer.

Welded Probe (SPW)

Welded probes typically are constructed of pipe or heavy-wall tubing and are welded to an SPW flange, which is bolted to a flanged process interface nozzle.

Welded probes are durable and able to withstand vibration, clogging, and erosion. However, because welded probes cannot be removed while the process is active, they are more difficult to maintain.

Their larger size also decreases flow speed, allowing more particulate to fall out of the sample. However, decreased flow speed and increased volume may lead to increased time delay to the analyzer.

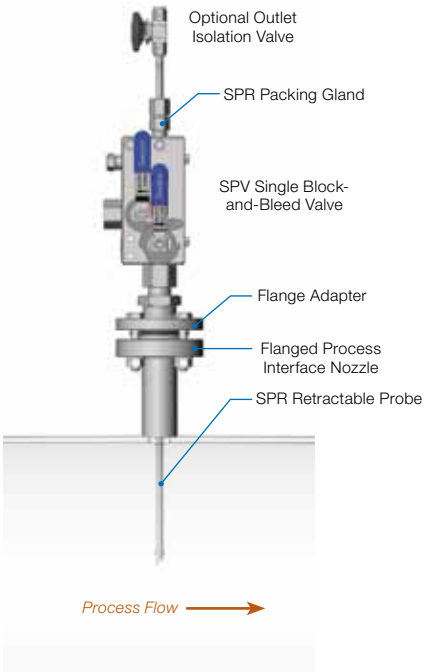


Swagelok SPM Subsystem with SPW Welded Probe and SPV Double Block-and-Bleed Valve

Retractable Probe (SPR)

Retractable probes are inserted into the process line through the SPV valve. They can be removed from the process line while the process is active, so service and maintenance are easier.

Retractable probes require an environmental seal, which typically consists of a packing gland that compresses a sealant on the outside of the probe. To enable proper sealing, retractable probes typically are constructed of small-diameter (1/4 to 3/8 in. [6 to 10 mm]) tubing. The smaller probe minimizes sample volume and reduces time delay, but creates a faster sample flow speed that could carry more condensate and particulate into the sample system. The smaller diameter also makes these probes more sensitive to vibration, clogging, and erosion.

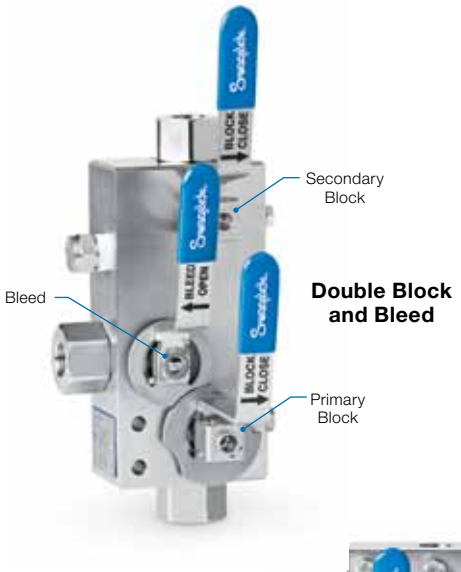


Swagelok SPM Subsystem with SPR Retractable Probe and SPV Single Block-and-Bleed Valve

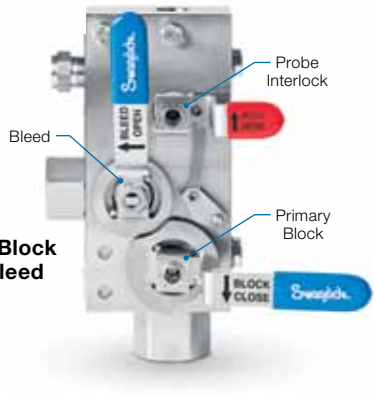
Sample Probe Valve Design

All SPVs contain a primary block valve and a bleed valve for depressurizing the sample line, which can be interlocked. That is, when the block valve is open to the process, the bleed valve is locked closed; when the bleed valve is open, the block valve is locked closed. Because only one valve can be open at a time, there cannot be continuous flow from the process valve to the bleed valve. The SPV double block-and-bleed version includes a secondary block valve for secure process isolation.

The SPV single block-and-bleed valve interlock system will not allow operators to close the primary block valve when the probe is in service, thereby eliminating the possibility of crimping the probe. In addition, the patent-pending probe interlock prevents the probe from being inserted when the primary block valve is closed, which prevents damage to the primary block valve seats and ball.



Double Block and Bleed



Single Block and Bleed

Ordering a Sample Probe Module

To enable the Swagelok SPM to serve the broadest range of process applications, conditions, and media, we allow you to order sample probes and sample probe valves separately.

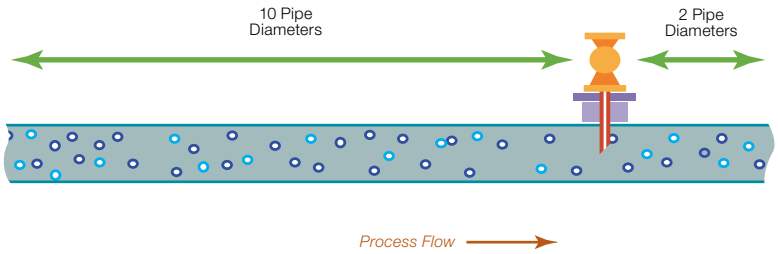
- Select an SPW or SPR sample probe based on your application.
  - SPW welded probes typically are used in high-volume, high-pressure applications; they cannot be removed while the process is active. See **SPW Welded Probes,** page 8, and the ordering information on page 11.
  - SPR retractable probes typically are used in lower-volume applications; they can be removed for maintenance or service while the process is active. See **SPR Retractable Probes,** page 12, and the ordering information on page 14.

- Select the SPV sample probe valve that will interface with the process flow; see **SPV Sample Probe Valves,** page 15, and the ordering information on page 18.
  - SPV-61 and SPV-62 double block-and-bleed sample probe valves are best suited for SPW sample probes.
  - SPV-63 and SPV-64 single block-and-bleed sample probe valves are best suited for SPR sample probes.

Installing a Sample Probe Module

The Swagelok SPM subsystem installs directly onto a process interface nozzle that is either threaded or flanged.

If your process is a gas stream, it is best to locate your process nozzle on the top of a horizontal process pipe to minimize extraction of moisture and particulate. That orientation also works well for liquid streams if the process pipe consistently is full of liquid. If in doubt, an upward flowing vertical pipe is certain to be full and may be a better alternative. For the best performance, try to get ten pipe diameters of straight uninterrupted flow upstream of the nozzle and two pipe diameters of clear flow downstream of the nozzle.



Select a probe with a large enough inside diameter to avoid blocking by particles in the process fluid, yet small enough to provide an acceptable time delay. Reducing internal volume of the probe will reduce sample time delay.

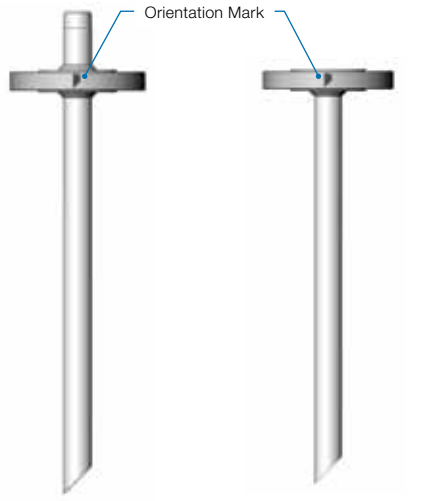
As a gas sample leaves the probe, it quickly cools to the temperature of the SPV body. If this temperature is below the dew point of the sample, consider using a heater to raise the SPV body temperature. Heaters are available; see page 19 for more information,

For more information about installation, operation, and maintenance of Swagelok SPM subsystems, see the *Sample Probe Module User's Manual,* MS-13-220.

SPW Welded Probes

Welded probes are intended for use with SPV-61 and SPV-62 sample probe valves. SPW welded probes are available with a 1/2 in. tube stub outlet; a 1/2 or 3/4 in. male NPT pipe outlet; or a raised-face flange outlet.

The outlet flange is marked to indicate the orientation of the angle cut on the probe end.



Probe with Stub Outlet

Probe with Raised Face Flange Outlet

Materials of Construction

Component	Material Grade / ASTM Specification
Forged flange body	*F316 SS / A182*
Probe—tube	*316 SS / A213*
Probe—pipe	*316L SS / A312*

Wetted components listed in *italics*.

Pressure-Temperature Ratings

Ratings are taken from ASME B16.5-2003, Table 2-2.2 and Table F2-2.2.

Working Pressures by Classes, psig

Temperature °F	ASME Class		
	150	600	1500①
–20 to 100	275	1440	3600
200	235	1240	3095
300	215	1120	2795
400	195	1025	2570
500	170	955	2390
600	140	900	2255
650	125	885	2210
700	110	870	2170

① Stub-outlet probes with 1/2 in. schedule 80 pipe are limited to ASME class 1205-equivalent ratings. Stub-outlet probes with 3/4 in. schedule 80 pipe are limited to ASME class 1060-equivalent ratings.

Working Pressures by Classes, bar

Temperature °C	ASME Class		
	150	600	1500①
–29 to 38	19.0	99.3	248.2
50	18.4	96.2	240.6
100	16.2	84.4	211.0
150	14.8	77.0	192.5
200	13.7	71.3	178.3
250	12.1	66.8	166.9
300	10.2	63.2	158.1
325	9.3	61.8	154.4
350	8.4	60.7	151.6

Testing

Every Swagelok SPW welded probe with a stub outlet is shell tested with nitrogen at 145 psig (10 bar) to a requirement of no detectable leakage with a liquid leak detector.

Cleaning and Packaging

All Swagelok SPW welded probes are processed in accordance with Swagelok *Standard Cleaning and Packaging (SC-10)*, MS-06-62.

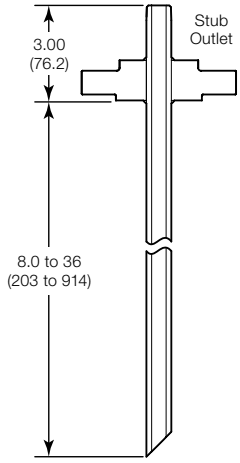
SPW Welded Probes

Dimensions

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Probe

Probe		Outlet End Connection	
Size	Type	Stub	Raised Face Flange
1/2 in.	Tube, 0.188 in. (4.78 mm) wall	1/2 in. tube	3/4, 1, 1 1/2, or 2 in.
	Pipe, XXS	1/2 in. male NPT	
	Pipe, schedule 160	1/2 in. male NPT	
	Pipe, schedule 80	1/2 in. male NPT	
3/4 in.	Pipe, schedule 160	3/4 in. male NPT	1, 1 1/2, or 2 in.
	Pipe, schedule 80	3/4 in. male NPT	



Probe with Stub Outlet

Probe Internal Volume

Probe				Internal Volume		
Size	Type	Nominal OD in.	Wall Thickness in. (mm)	$in.^3/ft$	cm^3/ft	cm^3/m
1/2 in.	Tube	0.50	0.188 (4.78)	0.15	2.46	8.07
	Pipe, XXS	0.84	0.294 (7.47)	0.60	9.83	32.3
	Pipe, schedule 160	0.84	0.188 (4.78)	2.03	33.3	109
	Pipe, schedule 80	0.84	0.147 (3.73)	2.81	46.1	151
3/4 in.	Pipe, schedule 160	1.05	0.219 (5.56)	3.53	57.9	190
	Pipe, schedule 80	1.05	0.154 (3.91)	5.19	85.1	279

SPW Welded Probes

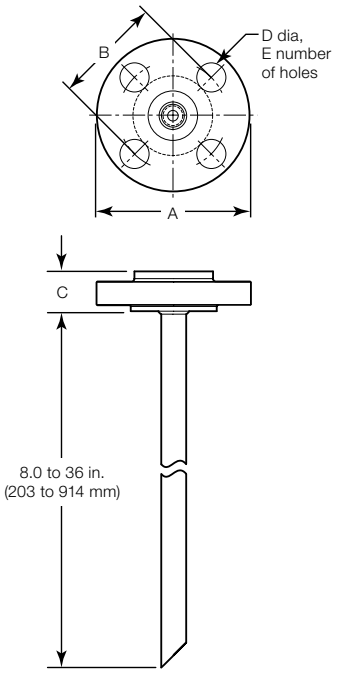
Dimensions

Dimensions are for reference only and are subject to change.

Outlet and Inlet Flange

ASME B16.5 Flanges

Nominal Flange Size	ASME Class	Dimensions, in.				Mounting Holes
		A	B	C	D	E
3/4 in.	150	3.88	2.75	0.57	0.62	4
	600	4.62	3.25	1.13	0.75	4
	1500	5.13	3.50	1.51	0.88	4
1 in.	150	4.25	3.12	0.63	0.62	4
	600	4.88	3.50	1.20	0.75	4
1 1/2 in.	150	5.00	3.88	0.76	0.62	4
	600	6.12	4.50	1.39	0.88	4
	1500	7.00	4.88	1.76	1.13	4
2 in.	150	6.00	4.75	0.83	0.75	4
	600	6.50	5.00	1.51	0.75	8



Probe with Raised Face Flange Outlet

DIN 2526 Form C Flanges

Nominal Flange Size	DIN Class	Dimensions, mm				Mounting Holes
		A	B	C	D	E
25 mm	PN16	115	85	18	14	4
	PN40	115	85	20	14	4
40 mm	PN16	150	110	19	18	4
	PN40	150	110	21	18	4
50 mm	PN16	165	125	21	18	4
	PN40	165	125	23	18	4

JIS B2220 Flanges

Nominal Flange Size	JIS Class	Dimensions, mm				Mounting Holes
		A	B	C	D	E
25 mm	16	125	90	15	19	4
	40	130	95	23	19	4
40 mm	16	140	105	18	19	4
	40	160	120	26	23	4
50 mm	16	155	120	18	19	8
	40	165	130	28	19	8

SPW Welded Probes

Ordering Information

Build an SPW welded probe ordering number by combining the designators in the sequence shown below.

	1	2	3		4	5
SPW - 3 -	**T08L**	**24**	**45**	-	**A1B1**	**S**

1 Probe Size

T08L = 1/2 in. tube, 0.188 in. (4.78 mm) wall
P08L = 1/2 in. pipe, XXS①
P08K = 1/2 in. pipe, schedule 160①
P08F = 1/2 in. pipe, schedule 80②
P12K = 3/4 in. pipe, schedule 160①
P12F = 3/4 in. pipe, schedule 80①

① Available with 1 1/2 in., 2 in., 40 mm, and 50 mm inlet connections *only*.
② Available with 1 in., 1 1/2 in., 2 in., 25 mm, 40 mm, and 50 mm inlet connections *only*.

2 Probe Length, in. (mm)

Measured from bottom of flange to probe end.

08 = 8.0 (203)
10 = 10 (254)
12 = 12 (305)
15 = 15 (381)
18 = 18 (457)
24 = 24 (610)
30 = 30 (762)
36 = 36 (914)

3 Probe End Cut

45 = 45° angle
90 = 90° square

4 Inlet Connection, Raised Face Flange

ASME B16.5 Flanges

A1B1 = 3/4 in. ASME class 150①
A1B3 = 3/4 in. ASME class 600①
A1B5 = 3/4 in. ASME class 1500①
A1C1 = 1 in. ASME class 150②
A1C3 = 1 in. ASME class 600②
A1D1 = 1 1/2 in. ASME class 150
A1D3 = 1 1/2 in. ASME class 600
A1D5 = 1 1/2 in. ASME class 1500
A1E1 = 2 in. ASME class 150
A1E3 = 2 in. ASME class 600

DIN 2526 Form C Flanges

DCC2 = 25 mm DIN PN 16②
DCC4 = 25 mm DIN PN 40②
DCD2 = 40 mm DIN PN 16
DCD4 = 40 mm DIN PN 40
DCE2 = 50 mm DIN PN 16
DCE4 = 50 mm DIN PN 40

JIS B2220 Flanges

J1C3 = 25 mm JIS 16②
J1C6 = 25 mm JIS 40②
J1D3 = 40 mm JIS 16
J1D6 = 40 mm JIS 40
J1E3 = 50 mm JIS 16
J1E6 = 50 mm JIS 40

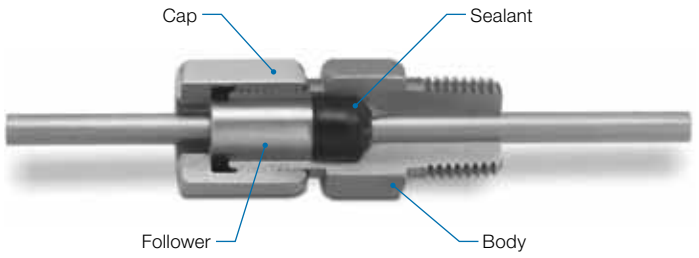
① Available with **T08L** probe size *only*.
② Available with **T08L** and **P08F** probe sizes *only*.

5 Outlet

F = Raised face flange (same type and size as inlet)
S = Stub (tube end on tube probe; male NPT end on pipe probes)

SPR Retractable Probes

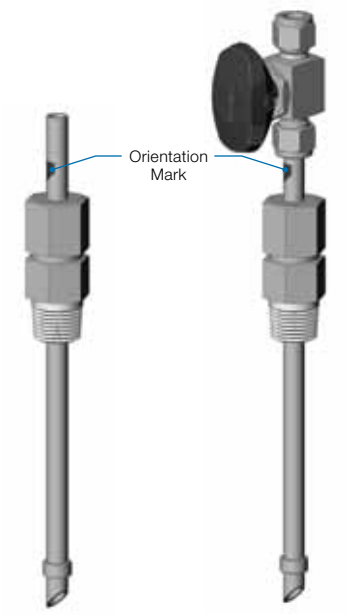
Retractable probes are intended for use with SPV-63 and SPV-64 sample probe valves; SPR retractable probes can be ordered with or without an outlet isolation valve. Probes are fabricated with a packing gland body, cap, follower, sealant, and stop collar manufactured by Conax Technologies.



Materials of Construction

Component	Material Grade / ASTM Specification
Conax® packing gland body, stop collar	*316 SS / A479*
Conax packing gland sealant	*Fluorocarbon FKM, Grafoil®, or PTFE / D1710*
Tube probe	*316 SS / A213*①
Conax cap, follower	303 SS / A582
Optional outlet isolation valve	See *One-Piece Instrumentation Ball Valves—40G Series and 40 Series* catalog, MS-02-331

Wetted components listed in *italics*.
① Nominal wall thickness, not minimum wall thickness.



Probe with Packing Gland

Probe with Packing Gland and Optional Outlet Isolation Valve

Pressure-Temperature Ratings

Ratings are for SPR only; for ratings of optional outlet isolation valve, see the Swagelok *One-Piece Instrumentation Ball Valves—40G Series and 40 Series* catalog, MS-02-331.

Pressure Ratings

Probe Size	1/4 in.	3/8 in.
Packing Gland Sealant	Working Pressure at 70°F (20°C) psig (bar)	
Fluorocarbon FKM	1500 (103)	500 (34.4)
Grafoil	7500 (516)	4500 (310)
PTFE	1600 (110)	1400 (96.4)

Temperature Range

Packing Gland Sealant	Temperature Range °F (°C)
Fluorocarbon FKM	–10 to 450 (–23 to 232)
Grafoil	–400 to 925 (–240 to 495)
PTFE	–300 to 450 (–185 to 232)

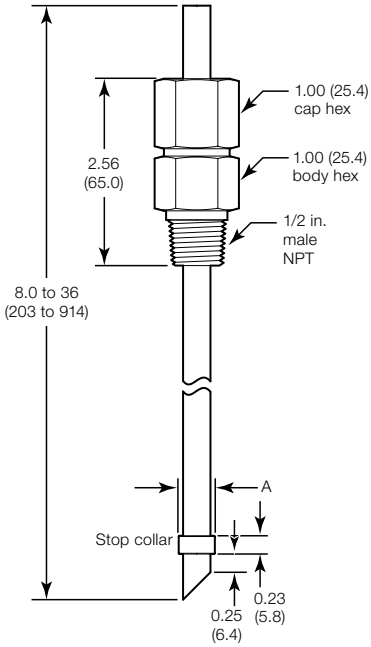
SPR Retractable Probes

Cleaning and Packaging

All Swagelok SPR retractable probes are processed in accordance with Swagelok *Standard Cleaning and Packaging (SC-10),* MS-06-62.

Dimensions

Dimensions, in inches (millimeters), are for reference only and are subject to change.



Tube Size	A, in. (mm)
1/4 in.	0.38 (9.6)
3/8 in.	0.50 (12.7)

Probe Internal Volume

Probe			Internal Volume		
Tube Size	Nominal OD in.	Wall Thickness in. (mm)	$in.^3/ft$	cm^3/ft	cm^3/m
1/4 in.	0.25	0.095 (2.41)	0.034	0.56	1.61
	0.25	0.065 (1.65)	0.14	2.29	7.53
	0.25	0.035 (0.89)	0.31	5.08	16.7
3/8 in.	0.375	0.134 (3.40)	0.11	1.80	5.91
	0.375	0.049 (1.24)	0.72	11.8	38.7

SPR Retractable Probes

Ordering Information

Build an SPR retractable probe ordering number by combining the designators in the sequence shown below.

	1	2	3	4	5
SPR - 3 -	**T4D**	**12**	**45**	- **4X**	**T**

1 Probe Size
- **T4F** = 1/4 in. tube, 0.095 in. wall
- **T4D** = 1/4 in. tube, 0.065 in. wall
- **T4B** = 1/4 in. tube, 0.035 in. wall
- **T6J** = 3/8 in. tube, 0.134 in. wall
- **T6C** = 3/8 in. tube, 0.049 in. wall

2 Probe Length, in. (mm)
- **08** = 8.0 (203)
- **10** = 10 (254)
- **12** = 12 (305)
- **15** = 15 (381)
- **18** = 18 (457)
- **24** = 24 (610)
- **30** = 30 (762)
- **36** = 36 (914)

3 Probe End Cut
- **45** = 45° angle
- **90** = 90° square

4 Packing Gland, Outlet Isolation Valve
- **XX** = No packing gland, no valve
- **4X** = Packing gland, no valve
- **4V** = Packing gland, 43G series valve with oval handle and Swagelok tube fitting end connections
- **CX** = CRN-registered packing gland, no valve①
- **CV** = CRN-registered packing gland, 43G series valve with oval handle and Swagelok tube fitting end connections①
- **NX** = NACE MR0175/ISO 15156-compliant packing gland, no valve

① Ratings of CRN-registered packing glands are limited to 1500 psig (103 bar) maximum and 850°F (454°C) maximum.

5 Packing Gland Sealant
- **X** = No packing gland
- **F** = Fluorocarbon FKM
- **G** = Grafoil
- **T** = PTFE

Options and Accessories

Replacement packing gland sealant kits are available. Select the appropriate kit based on the probe size and packing gland sealant.

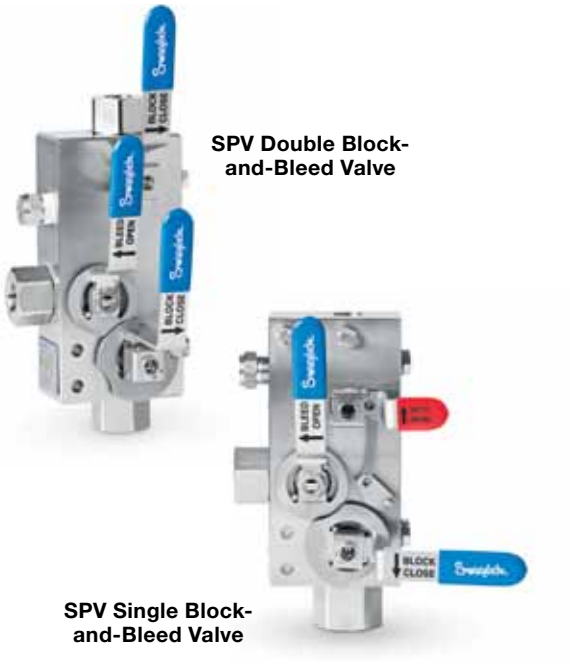
Probe Size	Packing Gland Sealant	Kit Ordering Number
1/4 in.	Fluorocarbon FKM	SPR-K-4F
	Grafoil	SPR-K-4G
	PTFE	SPR-K-4T
3/8 in.	Fluorocarbon FKM	SPR-K-6F
	Grafoil	SPR-K-6G
	PTFE	SPR-K-6T

SPV Sample Probe Valves

Materials of Construction

Component	Material Grade / ASTM Specification
Body	*316 SS / A276 and A479*
Balls, ball valve stems, ball valve end connections	*316, 316L SS / A479*
Body seals	*Graphite*
Probe lock spool	*PTFE-coated 316 / A479*
Spool O-rings (2)	*Fluorocarbon FKM*
Ball valve seats	*PEEK*
Ball valve lip seals	*PTFE outer jacket, Elgiloy® spring*
Ball valve handle sleeves	Vinyl
Probe interlock rivets (2) and retaining ring	300 series stainless steel
Optional heater block	6061 aluminum or 316 SS / A479
Optional heater junction box	Galvanized steel
Optional heater conduit	300 series SS / A321
Optional thermometer	See Swagelok *Temperature Measurement Devices* catalog, MS-02-353
All other components	316 SS

Wetted components listed in *italics*.



SPV Double Block-and-Bleed Valve

SPV Single Block-and-Bleed Valve

Pressure-Temperature Ratings

Temperature °F (°C)	SPV Configuration	
	SPV-61, SPV-62	SPV-63, SPV-64
	Working Pressure psig (bar)	
–58 (–50) to –40 (–40)	3600 (248)	—
–40 (–40) to 100 (37)	3600 (248)	1000 (68.9)
200 (93)	3095 (213)	865 (59.5)
300 (148)	2795 (192)	780 (53.7)
400 (204)	2570 (177)	—

Testing

Every SPV sample probe valve is factory tested hydrostatically. A shell test is performed at 1.5 times maximum rated working pressure and a seat test is performed at 1.1 times maximum rated working pressure, in accordance with BS EN 12266-1 and API 598.

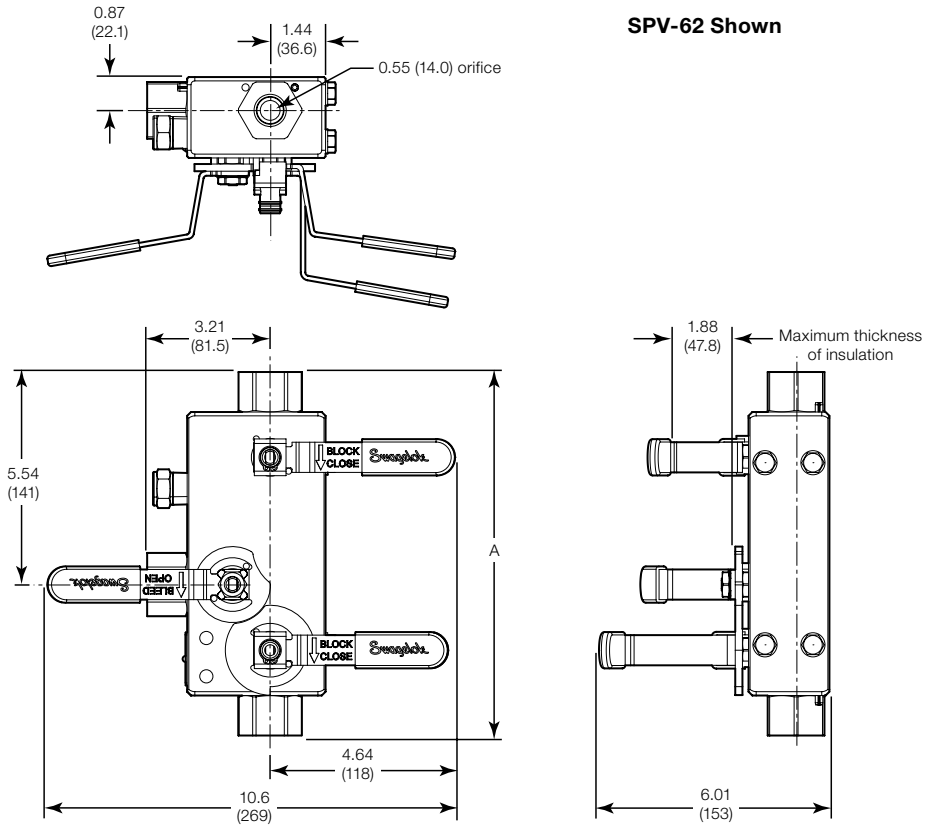
⚠ **Valves that have not been cycled for a period of time may have a higher initial actuation torque.**

SPV Sample Probe Valves

Dimensions

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Double Block-and-Bleed SPV Sample Probe Valves (SPV-61, SPV-62)



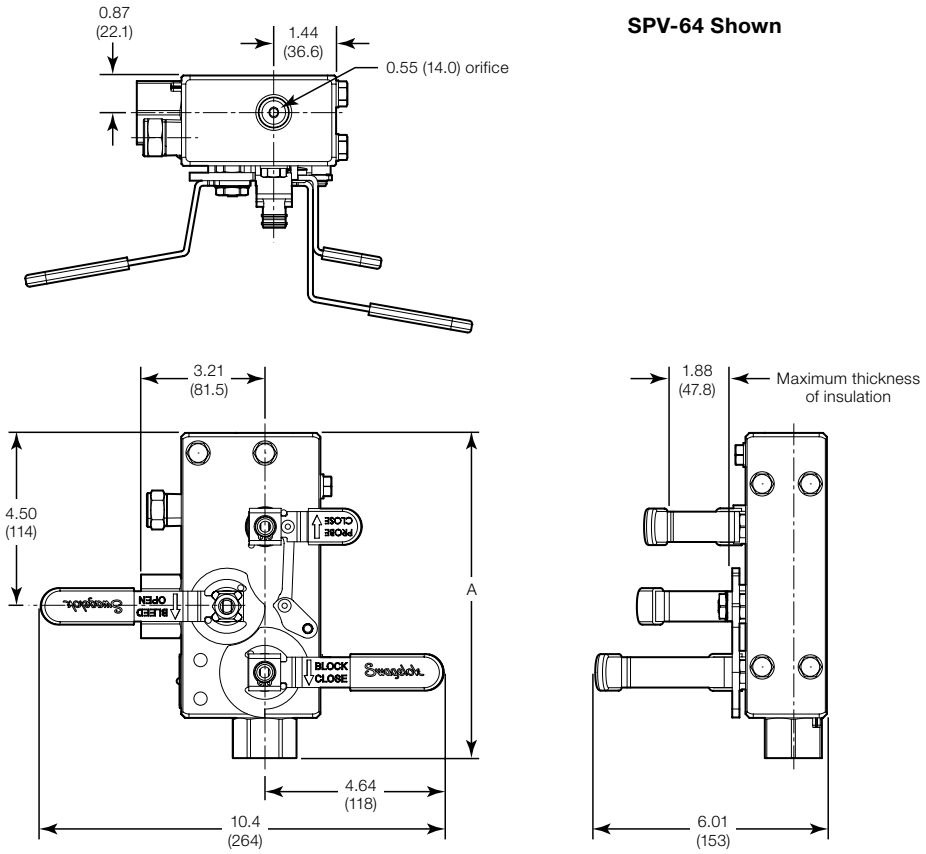
Inlet Size	A, in. (mm)
1/2, 3/4 in.	9.36 (238)
1 in.	9.67 (246)

SPV Sample Probe Valves

Dimensions

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Single Block-and-Bleed SPV Sample Probe Valves (SPV-63, SPV-64)



Inlet Size	A, in. (mm)
1/2, 3/4 in.	8.37 (213)
1 in.	8.68 (220)

Weight, All Configurations

22 lb (10 kg)

SPV Sample Probe Valves

Ordering Information

Build an SPV sample probe valve ordering number by combining the designators in the sequence shown below.

		1	2	3		4	5	6		7	8	9
SPV	-	**64**	SA	D	-	**XBN**	**A**	A	-	**D**	**A1**	**-LT**

1 Configuration

For use with SPW probes

61 = Double block-and-bleed, no valve interlocks
62 = Double block-and-bleed, valve interlocks

For use with SPR probes

63 = Single block-and-bleed, probe interlock
64 = Single block-and-bleed, valve and probe interlocks

2 Valve Body Material

SA = 316 stainless steel

3 Seat, Seal Materials

D = PEEK, graphite and PTFE①

① Configurations **63** and **64** also have fluorocarbon FKM.

4 Inlet End Connection

XAN = 1/2 in. female NPT
XBN = 3/4 in. female NPT
XCN = 1 in. female NPT

5 Outlet End Connection

A = 1/2 in female NPT
B = 3/4 in. female NPT **(SPV-61** and **SPV-62** *only)*

6 Bleed End Connection

A = 1/2 in. female NPT

7 Handles

C = Nonlockable lever handles
D = Lockable lever handles for block valves and probe lock *only*

8 Heater (see page 19)

XX = No heater
A1 = Aluminum heater, 120 V (ac), 500 W
A2 = Aluminum heater, 240 V (ac), 500 W
S1 = 316 SS heater, 120 V (ac), 500 W
S2 = 316 SS heater, 240 V (ac), 500 W

9 Options

Omit for no options; omit second dash for multiple options.

-L = Probe packing gland lockout bracket **(SPV-63** and **SPV-64** *only)* (see page 19)
-T = Swagelok bimetal thermometer, 50 to 300°F (10 to 150°C), 3 in. (76 mm dial size), mounted to SPV body with 1/2 in. male NPT

SPV Sample Probe Valves

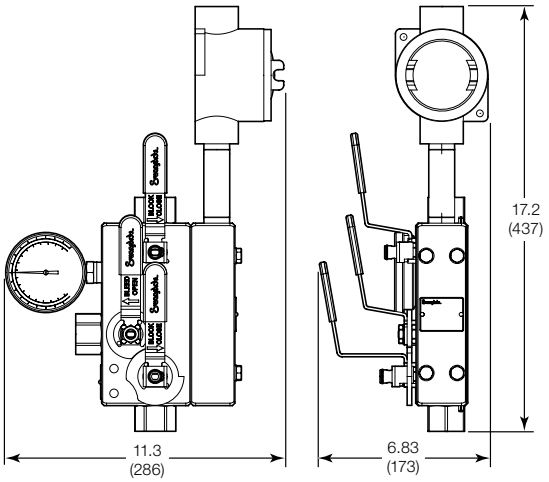
Options

Heater

An optional heater is available to provide reliable temperature control of the SPV body for freeze protection or temperature maintenance. It mounts directly to the SPV body.

Heater with Stainless Steel Block

- Adjustable controller with temperature set range from 50 to 300°F (10 to 148°C).
- Aluminum or 316 stainless steel heater block
- 500 W, 120 or 240 V (ac).
- 3/4 in. female NPT inlet connection to the heater control box.
- ATEX (Europe) and IECEx (International): Group II, Category 2G, EEx d IIB+H2; T3 (200°C, 392°F)



SPV-62 Shown with Optional Heater and Thermometer

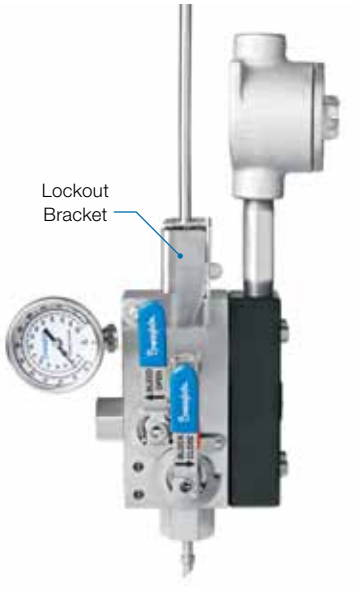
- CSA (Canada and U.S.A.): Class 1, Div 1, Groups B, C, D; T3 (200°C, 392°F)

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Weights: aluminum heater 8.0 lb (3.6 kg); 316 SS heater 12.5 lb (5.7 kg).

Probe Packing Gland Lockout Bracket

A bracket that locks out access to the probe packing gland hexes is available to prevent unintentional loosening of the packing gland cap or removal of the packing gland body. When unlocked, the bracket swings out of the way to allow access to hexes.



- 316 stainless steel construction.
- 5/16 in. (7.9 mm) maximum lock shank diameter.
- Compatible with most retractable probes with 1/2 in. male NPT connections with up to 1 in. hex size.

Swagelok Custom Solutions

Although a wide variety of sample probes are available as standard, there may be those applications which require different materials, sizes, or lengths. Contact your authorized Swagelok representative to discuss a Swagelok custom solution.

Regulatory Compliance

Europe

- Pressure Equipment Directive (PED) 97/23/EC
- Atmospheres Explosive Directive (ATEX) 94/9/EC
- Restriction of Hazardous Substances Directive (RoHS) 2002/95/EC

Americas

- Hazardous location electrical approval (CSA/UL)
- CRN registered in Canada (individual components of assembly)

Contact your authorized Swagelok representative for specific assembly compliance approvals and certifications.

Safe Product Selection
When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

Caution: Do not mix or interchange Swagelok product components with those of other manufacturers.

Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.